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The correlation of pregnancy complication and Body Mass Index

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Abstract

Nausea and vomiting currently occur in pregnancy. Approximately 70-85% of pregnant women experience nausea and half will also experience vomiting episodes. This study assesses the effect of BMI on the tendency of pregnant women to vomit and on their general condition during pregnancy.We included patients in this study who presented to our gynaecological room and clinic during their first trimester of pregnancy women completed a questionnaire assessing gravity, parity, gestational age, BMI. Women requested to report the number of vomiting episodes per day and their general condition using a 0 to 10 scale.Two hundred consecutive women were included in the study. The low frequency group (mean of less than 2 episodes) consisted of 158 women and the high frequency group (2 and more vomiting episodes) included the remaining 42 women. There was a significant correlation between of episodes of vomiting with BMI, age of mother and general condition. Women with higher frequency of vomiting episodes tend to have a lower BMI score and a worse general condition than women with low frequency of vomiting episodes.

Keywords: body mass index; nausea and vomiting pregnancy

1. Introduction

Nausea and vomiting in pregnancy (NVP) is a major health problem and a common symptom in the first trimester, and is a diagnosis of exclusion of other causes of nausea and vomiting (Jenabi and Mohammad Alizade-C, 2009; Jewell and Young, 2001).

Nausea and vomiting are a common symptom of pregnancy, affecting approximately 70–85% of pregnant women (Jewell and Young, 2003). Nausea and vomiting associated with pregnancy are commonly known as ‘morning sickness’ with an onset which often begins between the fourth and seventh week after the first missed menstrual period and resolves by the 20th week of gestation (Gadsby et al., 1993).

Nausea and vomiting are considered a typical and almost inevitable feature of pregnancy; something to be expected, survived, resisted, resented and acknowledged by others (Locock et al., 2008), and a sickness that is accompanied by a joyful perception of the new life developing within (Chou et al., 2006).

One forth of nauseous pregnant women requires time off from work (Vatyavnich et al., 2001).

From the clinical point of view, nausea with or without vomiting should be distinguished from hyperemesis gravidarum that is characterized by serious and persistent vomiting that interferes with fluid intake and nutrition.

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True hyperemesis gravidarum (HG) is characterized by intractable vomiting with weight loss and dehydration, electrolyte imbalance appears to occur in less than 1% of pregnant women (Arsenault et al., 2002; Furneaux, 2001; Huxley et al., 2000).

A review of evidence-based management of nausea and vomiting in pregnancy found that these discomforts have a profound effect on women's health and quality of life during pregnancy, as well as a financial impact on the health-care system, and early recognition and management are recommended (Arsenault et al., 2002). Nausea and vomiting can impose substantial lifestyle limitations on pregnant women that can have a significant impact on the quality of family life, on a woman's ability to perform daily activities, and on her social functioning (O'Brien and Naber, 1992; Smith et al., 2000) and on stress levels (Kuo et al., 2007). Even when the condition is mild, symptoms can cause considerable distress and temporary disability (O'Brien and Naber, 1992; Smith etal., 2000). Women often try their best to find coping strategies based on their views (Chou et al., 2006).

While many theories exist, the exact mechanism causing nausea and vomiting in pregnancy is unknown. There is general consensus that the pregnancy hormone human chorionic gonadotropin plays a significant role (Goodwin, 2002; Davis, 2004). Other factors that may influence the incidence and severity of nausea and vomiting in pregnancy include gastrointestinal, genetic, ves- tibular, olfactory, psychosocial and environmental factors (Goodwin, 2002; Davis, 2004) and thyroid disturbances (Fantz et al., 1999). Given that the exact cause is not understood, treatment continues to be aimed at management of symptoms. Others argue that physiological explanations are also important, and that nausea and vomiting may even be a by-product of physical processes that help protect the fetus from rejection (Coad et al., 2000).

Body mass index (BMI) is a function of weight and height, expressed as weight in Kg/height in m^2 and has been wildly used to guide recommendation for weight gain during pregnancy. National Academy of Science has recommended a weight gain of 12.5–18 kg for thin females, 11.5–16 kg for females weigh within the normal range, 7–11.5 kg for obese females and 6 kg for very obese females. This classification was made according to the BMI.

Recently, and contrary to previous understandings, an increased body mass index (BMI) was found to be decreased nausea and vomiting in pregnancy (Aroya et al., 2005).

We therefore, set out to evaluate the effect of body mass index (BMI) on the tendency of women to vomiting during pregnancy in the health clinic of Tamin Ejtemaee in city of Hamedan.

2. **Methods**

For this longitudinal study, all females who had referred to the health clinic of Tamin Ejtemaee in city of Hamedan in west of Iran during a 4-month period in years of 2009 were selected and entered the study after completing an informed contest.

A total of 108 pregnant women referred during the study period, 8 participate don't contributed and were omitted of study, ultimately 100 of participate contributed in this study. They were included in the study if it was their first attendance at the clinic, were at less than 17 weeks gestation and had nausea of pregnancy, with or without vomiting. Subjects were excluded if they: (1) had other medical disorders such as upper gestational tract disease, vestibular disease, liver disease or hyperthyroidism (2) were mentally retarded (3) had taken another medication in the past week that might aggravate or alleviate nausea or vomiting, such as iron tablets, anti-emetics (4) refused to participate in the trial (5) had hypermesis gravidarum which was defined as vomiting severe enough to produce dehydration, acid-base disturbances, and electrolyte imbalances, especially hypokalemia.

The research Ethics Committee of the University of Toyserkan approved the study protocol, and all women provided informed consent. One hundred consecutive women were finally enrolled in the study.

All women completed questionnaire obstetrical and physical characteristics, including gravity, parity, gestational age, education and occupation. Body Mass Index (BMI) was calculated from the database with the use of prepregnancy weight and height, as reported by the patient in prepregnancy and at her first antepatum visit.

Women were requested to report the number of vomiting. Patients were allocated to either a low-frequency group (0-1 vomiting episodes per day) or to a high-frequency group (2 and more vomiting episodes per day).

Women reported their general condition by Visual Analog Scale (0-verygood, 10= very bad).

SPSS (SPSS Inc., Chicago IL) statistical software was used for data analysis. All hypothesis tests were two-sided and P-values<.05 were considered statistically significant. Statistical analysis was performed using Students t and Chi square test.

3. Results

A total of 108 pregnant women referred during the study period, 8 participate don't contributed and were omitted of study, ultimately 100 of participate contributed in this study.

The low frequency nausea and vomiting group consisted of 79 women and the high frequency group included 21 women.

The between of episode number of vomiting group and BMI in before and early of pregnancy was significant correlation (Table 1). In this study, Women in the group of 2 and more vomiting episode per day have less BMI than those in the group less of 2 per day.

In this study, Women in the group of 2 and more vomiting episode per day reported a worse general condition than those in the group less of 2 per day (p=0).

Table 1: BMI of mother according to episode number of vomiting

Episode number of vomiting / BMI	<2 N=79	≥ 2 N=21	P
BMI in before of pregnancy	24.2±3.2*	22.2±4.8	0.03
BMI in early of pregnancy	24.5±3.0*	24.0±4.3	0.02

*Mean± standard deviation of the difference
T- Test.

Table 2 showed that between of episode number of vomiting groups and age of mother was significant correlation and with elevates age of mother decreased episode number of vomiting. The between of BMI mean and gravity and parity mean no was significant correlation (Table 2).

Table 1: Maternal of characterization according to episode number of vomiting

Episode number of vomiting / characterization	<2 N=79	≥ 2 N=21	P
Age[1]	28.0±7.0*	26.0±0.7	0.02
Gravity[2]	0.66±0.9*	0.6±0.5	0.1
Parity[1]	0.5±0.7*	0.4±0.5	0.07

*Mean± standard deviation of the difference
[1]t-test
[2] chi square test

4. Discussion

The studies were performed about correlation of vomiting in pregnancy and body mass index is seldom and only 2 studies were found in different references.

The study of Aroya (Aroya et al., 2005) showed that between of episode number of vomiting group and BMI in early of pregnancy was significant correlation. In other words, Women in the group of vomiting episode 2 and more per day have less BMI than those in the group less of 2 per day that it is similar with our study.

Klebanoff (Klebanoff et al., 1985) has found that vomiting without nausea was more common in women weighing 77.1 Kg or more. He didn't address BMI in their study. Therefore, our findings are not necessarily in conflict with Klebanoff findings.

In this study, Women in the group of 2 and more vomiting episode 2 and more per day reported a worse general condition than those in the group less of 2 per day, Aroya study is similar to our study (Aroya et al., 2005).

We showed that between of episode number of vomiting groups and age of mother was significant correlation and with elevates age of mother decreased episode number of vomiting. The between of BMI mean and gravity and parity no was significant correlation. The other study was not performed about this matter.

Hyperventilation associated with nausea and vomiting in pregnancy may not be suspected clinically (Black, 2002). Obese women tend to hypoventilation mainly due to increased intra abdominal pressure (Golaszewski et al., 1997). We speculate that the reason why women with a higher BMI score experience less intense nausea and vomiting in pregnancy could be due to a lesser degree of hyperventilation.

A limitation of our study is that it did not include analysis of beta- HCG levels, thyroid prolactin hormones, serum electrolytes, transaminases or blood gases. We propose that this study perform in other aria and with more sample size.

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